WOSC10

PREVIEW QUESTION BANK

Module Name : Mech. Prod. Ind. Civil Structural Const. Transp. Materials Science Engg-E

Exam Date : 25-Mar-2018   Batch : 11:00-13:00

Page 1 of 1

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
		Objective Question		
1	1	Fedaration Cup, World Cup, Allwyn International Trophy and Challenge Cup are awarded to winners of A1: Tennis **A2: Volleyball – (Correct Alternative)** A3: Basketball A4: Cricket	1.0	0.25
		Objective Question		
2	2	Which is the first country in the world to use drones for national mail service? A1: Russia	1.0	0.25

A2 France – (Correct Alternative)
:

A3 Sweden
:

A4 China
:

Objective Question

| 3 | 3 | Consider the following materials/objects: | 1.0 | 0.25 |

A. Cornea

B. Diamond

C. Silicon

D. Sodium Chloride

The above materials/objects when arranged in increasing order of refractive index would be as follows:

A1 ADCB
:

A2 ADBC – (Correct Alternative)
:

A3 DABC
:

A4 DACB
:

Objective Question

| 4 | 4 | Various developed countries often claim that cattles in less developed countries are responsible for huge release of green house gases, thus causing green house effect. The developed countries often use this logic that these countries have lot of low yield cattle and if high yield cattle are adopted on a large basis, then release of significant amount of greenhouse gases can be checked from releasing in the atmosphere. Cattles release the greenhouse gases due to: | 1.0 | 0.25 |

A1 Methanogenic bacteria in the stomach – (Correct
:   Alternative)

A2
:   Improper handling of cow waste (eg: cow-dung, urine,etc.)

A3
:   Improper handling of leftover fodder

A4
:   High use of chemical fertilizers in agriculture

Objective Question				
5	5	Consider the following statements and select the wrong option	1.0	0.25

A1 If a person is stung by a honeybee it causes pain and irritation.
:   In such case, if baking soda is applied to the area, it provides
     relief to the person.

A2
:   Vitamin E is helpful in relief from sunburns

A3 On various sunscreen creams/lotions SPF is mentioned.
:   SPF stands for Sun Protection Factor. SPF 20 means that
the lotion is protecting you from 20% of the harmful UV
radiations in the sunlight. – (Correct Alternative)

A4 Vitamin D is required for the absorption of calcium by human
:   beings

Objective Question				
6	6		1.0	0.25

Following are some observed natural phenomena :

A. Mirage seen in places like deserts

B. In winter sound of a whistle of a railway engine is heard at much longer distances

C. Twinkling of a star in night as seen by naked eye

D. Visibility of sun for some time after the sunset

Which of the above natural phenomena are related to the variation in density of atmospheric air?

A1 : ABD

A2 : BCD

A3 : ABCD – (Correct Alternative)

A4 : None of these

Objective Question			
7	7	The following are some common diseases: A. Diphtheria B. Rabies C. Cholera D. Malaria Which of the above diseases are not caused by Virus? A1 : ABC A2 BCD	1.0	0.25

		:		
		A3 : **ADC – (Correct Alternative)**		
		A4 : ABD		

Objective Question

8	8	Which of the following is Greenhouse gas?	1.0	0.25
		A1 : Carbon Monoxide		
		A2 : **Carbon Dioxide – (Correct Alternative)**		
		A3 : Sulphur Dioxide		
		A4 : Chlorine		

Objective Question

9	9	Tuberculosis is caused due to	1.0	0.25
		A1 : **Bacteria – (Correct Alternative)**		
		A2 : Virus		
		A3 : Fungus		
		A4 : None of the above		

Objective Question				
10	10	United Nations Headquarter is situated at	1.0	0.25

A1: Geneva

A2: Washington D.C.

A3: New York – (Correct Alternative)

A4: Paris

Objective Question				
11	11	A seller gives a discount of 25% on a product with MRP marked INR 3680. He earns a profit of 15% over its cost price in this transaction. Cost price of the product is	1.0	0.25

A1: 2100

A2: 2200

A3: 2300

A4: 2400 – (Correct Alternative)

Objective Question				
12	12	The side of a rectangular field is in ratio 4:5. Area of the field is 12500 sq mt. If the cost of fencing is INR 5/meter, how much it will cost to fence entire field?	1.0	0.25

A1: INR 61,000

A2: **INR 62,500 – (Correct Alternative)**

A3: INR 63,500

A4: INR 65,000

Objective Question

| 13 | 13 | A box has 3 red, 2 yellow and 5 green balls. If two balls are drawn at random, what is the probability that both are yellow balls? | 1.0 | 0.25 |

A1: **1⁄45 – (Correct Alternative)**

A2: 5⁄18

A3: 3⁄31

A4: 2⁄9

Objective Question

| 14 | 14 | If X and Y together can do a piece of work in 6 days. X alone can do the same work in 15 days. What time will Y take to do the same work alone? | 1.0 | 0.25 |

A1: 8 days

A2: 9 days

A3 10 days – (Correct Alternative)

		:		
		A4 :	12 days	

Objective Question

15	15	If a solid sphere of radius 15 cm is molded into 27 spherical smaller solid balls of equal radius, then the surface area of each smaller ball is	1.0	0.25
		A1 : 100Ωcm^2 – (Correct Alternative)		
		A2 : 105Ωcm^2		
		A3 : 110 Ωcm^2		
		A4 : 115Ωcm^2		

Objective Question

16	16	Three six-sided dice are rolled simultaneously, what is the probability of getting a different number on each dice?	1.0	0.25
		A1 : 1⁄3		
		A2 : 2⁄3		
		A3 : 4⁄9		
		A4 : 5⁄9 – (Correct Alternative)		

Objective Question			
17 17	The speed of a boat is 20 km/hr in still water. If the river is running at 5 km/hr, it takes boat 96 minutes to go to a place and come back to initial position. How far is the place from the initial point?	1.0	0.25

A1 : 12 km

A2 : 13 km

A3 : 15 km – (Correct Alternative)

A4 : 18 km

Objective Question			
18 18	What is the probability of drawing an Ace or a King from a deck of 52 cards?	1.0	0.25

A1 : 1/13

A2 : 2/13 – (Correct Alternative)

A3 : 1/52

A4 : 1/26

Objective Question			
19 19	A cricketer has an average of 55 runs in 5 innings. Find out how many runs she needed to score in her sixth innings to raise her average to 60 runs?	1.0	0.25

A1   60

:

A2 : 75

A3 : 80

A4 : 85 – (Correct Alternative)

Objective Question				
20	20	The LCM of two numbers is 900 and their HCF is 50. If one of the numbers is 450, the other is	1.0	0.25

A1 : 120

A2 : 100 – (Correct Alternative)

A3 : 125

A4 : 150

Objective Question				
21	21	If you write an original software, what type of IP rights you can get to make and sell copies of your work?	1.0	0.25

A1 : Copyright – (Correct Alternative)

A2 : Patents

A3 Registered Designs

		:		
		A4 :	Trademarks	

Objective Question

22	22	International organization with objective to encourage creative activity and to promote intellectual property throughout world is	1.0	0.25
		A1 : **WIPO – (Correct Alternative)**		
		A2 : World Bank		
		A3 : WTO		
		A4 : UNDP		

Objective Question

23	23	_____ is a form of intellectual property that protects the expression of ideas	1.0	0.25
		A1 : Trade name		
		A2 : **Copyright – (Correct Alternative)**		
		A3 : Patent		
		A4 : Trade Mark		

Objective Question

24	24	A formula, process, device or other business information that has commercial value and is kept confidential to maintain an advantage over competitors is known as a:	1.0	0.25

A1: Patent

A2: Trade secret – (Correct Alternative)

A3: Copyright

A4: Trade Mark

Objective Question

25	25	Fair use allows you to use a limited amount of copyrighted material for your educational use. Which step below does NOT pass the fair use test?	1.0	0.25

A1: Will be used for a non-profit educational purpose

A2: Will be used on a Web page – (Correct Alternative)

A3: Will only use a small portion

A4: Will not deprive the author from making money

Objective Question

26	26	Term of patent in India is	1.0	0.25

A1: 15 years

A2
:
25 years

A3
: **20 years – (Correct Alternative)**

A4
:
10 years

Objective Question

27	27	What does a trademark protect?	1.0	0.25

A1
:
An invention

A2
:
a work of art

A3
: **logos, names and brands – (Correct Alternative)**

A4
:
the look, shape and feel of a product

Objective Question

28	28	If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention ?	1.0	0.25

A1
:
Copyright

A2
:
Geographical indications

A3
: **Patents – (Correct Alternative)**

A4:	Trademarks

Objective Question

29	29	A patent awarded by the patent office in Japan is valid in:	1.0	0.25
		A1: Indonesia		
		A2: Japan – (Correct Alternative)		
		A3: All ASEAN countries		
		A4: All countries that adhere to TRIPS		

Objective Question

30	30	Which of the following is NOT a basic requirement for a patent?	1.0	0.25
		A1: It must have utility		
		A2: It must be novel		
		A3: It must not be obvious to a person of ordinary skill in the field		
		A4: It must be extraordinary creative – (Correct Alternative)		

Objective Question

31	31	Choose the word or phrase that is most nearly opposite in meaning to the word in capital letter . LICENSED:	1.0	0.25

A1:	Unnoticed		
A2:	unwritten		
A3:	**not formally authorised – (Correct Alternative)**		
A4:	not properly trained		

Objective Question

32	32	Clear the jumble and select a grammatically correct sentence which also makes sense. To/ pay/ fifty/ rupees/ much/ too/ was/ me/ for/ thousand/ just	1.0	0.25
		A1: Fifty thousand rupees was just too much for me to pay – (Correct Alternative)		
		A2: Pay just fifty thousand rupees to me was too much		
		A3: Fifty thousand rupees was too much just to pay for me		
		A4: To pay just fifty thousand rupees was too much for me		

Objective Question

33	33	Select the word or set of words that <u>best</u> completes the following sentence. Because our supply of fossil fuel has been sadly ___, we must find ___ source of energy.	1.0	0.25
		A1: stored…..hoarded		
		A2: compensated……significant		

		A3: exhausted....inefficient		
		A4: depleted.....alternate – (Correct Alternative)		

Objective Question

34	34	Tick the word <u>closest</u> in meaning to the word in *italics* - an *audacious* attempt	1.0	0.25
		A1: useless		
		A2: foolish		
		A3: bold – (Correct Alternative)		
		A4: crazy		

Objective Question

35	35	Choose the most appropriate word to complete the following sentence: There is a _____ of cows in the next field.	1.0	0.25
		A1: Flock		
		A2: Swarm		
		A3: Group		
		A4 Herd – (Correct Alternative)		

:

Objective Question

| 36 | 36 | Choose the phrase which fits the sentence best : The bus _____ coming. | 1.0 | 0.25 |

A1 : Will

A2 : Has

A3 : Is – (Correct Alternative)

A4 : On

Objective Question

| 37 | 37 | Choose the correctly spelt word: | 1.0 | 0.25 |

A1 : adversity – (Correct Alternative)

A2 : adeversity

A3 : advercity

A4 : aedversity

Objective Question

| 38 | 38 | Which of the following words best explains the phrase given below? One who abandons his religious faith. | 1.0 | 0.25 |

A1:	traitor
A2:	**apostate – (Correct Alternative)**
A3:	prostrate
A4:	blasphemer

Objective Question

39	39	Select the word that is most appropriate to complete the sentence: He was blind _____ one eye.	1.0	0.25

A1:	with
A2:	along
A3:	**in – (Correct Alternative)**
A4:	on

Objective Question

40	40	Choose the word or phrase that is most nearly opposite in meaning to the given word. **Widely**	1.0	0.25

A1:	**narrowly – (Correct Alternative)**
A2:	spaciously

	A3 :	broadly		
	A4 :	relatively		

Objective Question

41	41	Which of the following are prime numbers?	1.0	0.25
		A1 : 1,3,5		
		A2 : 1,5,7		
		A3 : 2,3,5 – (Correct Alternative)		
		A4 : 1,7,9		

Objective Question

42	42	A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 o'clock, the true time is	1.0	0.25
		A1 : $59\frac{7}{11}$ min. past 3 p.m.		
		A2 : 4 P.M. – (Correct Alternative)		
		A3 : $58\frac{7}{11}$ min., past 3 p.m.		
		A4 : $2\frac{3}{11}$ min. past 4 p.m		

Objective Question		
43 43	In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is	1.0 0.25
	A1 : 75 cu. m	
	A2 : 750 cu. m – (Correct Alternative)	
	A3 : 7500 cu. m	
	A4 : 75000 cu. m	

Objective Question		
44 44	The total time taken by a boatman to row his boat upstream and downstream distance of 56 km together is 12 hours. The difference between times taken by him to row his boat another upstream and downstream distance of 42 km is 3 hours. Find the speed of boat and stream.	1.0 0.25
	A1 : 12.5 kmph, 1.5 kmph	
	A2 : 11.5 kmph, 2.5 kmph	
	A3 : 9.5 kmph, 4.5 kmph	
	A4 : 10.5 kmph, 3.5 kmph – (Correct Alternative)	

Objective Question		
45 45	A says to B "I am twice as old as you were when I was as old as you are". The sum of their ages is 56 years. Find the difference of their ages.	1.0 0.25

A1
: 9

A2
: 11

A3
: 13

A4
: **8 – (Correct Alternative)**

Objective Question

| 46 | 46 | A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container? | 1.0 | 0.25 |

A1
: 26.16

A2
: 28.16

A3
: **29.16 – (Correct Alternative)**

A4
: 30.16

Objective Question

| 47 | 47 | How many times is the HCF of 48, 36, 72, and 24 contained in their LCM? | 1.0 | 0.25 |

A1
: 8 times

A2 16 times

:

A3 **12 times – (Correct Alternative)**
:

A4
: 4 times

Objective Question

| 48 | 48 | In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together? | 1.0 | 0.25 |

A1
: 120

A2 **720 – (Correct Alternative)**
:

A3
: 4320

A4
: 1440

Objective Question

| 49 | 49 | Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1:1:2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be: | 1.0 | 0.25 |

A1
: Rs. 169.50

A2
: Rs. 170

A3
: Rs. 180
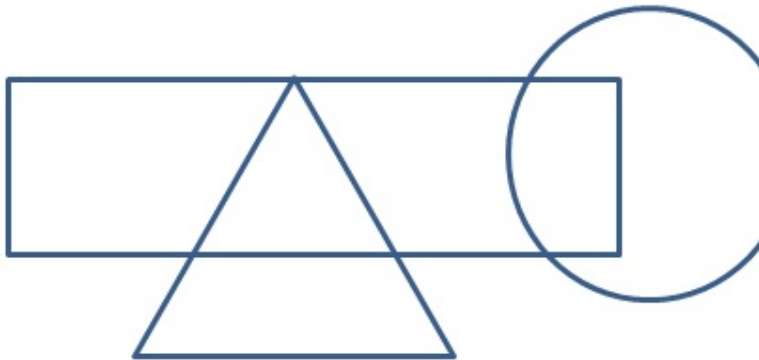
A4 :	**Rs. 175.50 – (Correct Alternative)**	

Objective Question

50	50	In an exam, Class A scored an average of 50 marks with standard deviation of 5. Class B scored an average of 50 with standard deviation of 9. Which of the following statements is true?	1.0	0.25
		A1 : Class B has more students than Class A.		
		A2 : Class A has more students than Class B		
		A3 : Class A has more outlier students than Class B		
		A4 : Class B has more outlier students than Class A – (Correct Alternative)		

Objective Question

51	51	C is favorite child of F. C is fond of her younger brother B. B is not the only sibling of A. F loves her father M. What is A to M?	1.0	0.25
		A1 : Grand child – (Correct Alternative)		
		A2 : Grand parent		
		A3 : No relation		
		A4 : Parent		

Objective Question

52	52	If HEN = 124; WIRE = 9752; and RAT = 538, EATEN is _____?	1.0	0.25

A1
: 28324

A2
: 23874

A3
: 23824 – (Correct Alternative)

A4
: 42832

Objective Question			
53	53	A pen was marked as Rs 1000. After a good negotiation, I bought it at a discount of 20%. Now I am offering the same pen at 20% profit. What is the difference between the new price and old price? A1 : Rs. 160 A2 : Rs. 200 **A3** **: Rs. 40 – (Correct Alternative)** A4 : No difference	1. 0	0. 25

Objective Question			
54	54	In Roman numerals, M, L, and XL stand for _____. **A1** **: 1000, 50, 40 – (Correct Alternative)** A2 : 40, 42, 44	1. 0	0. 25
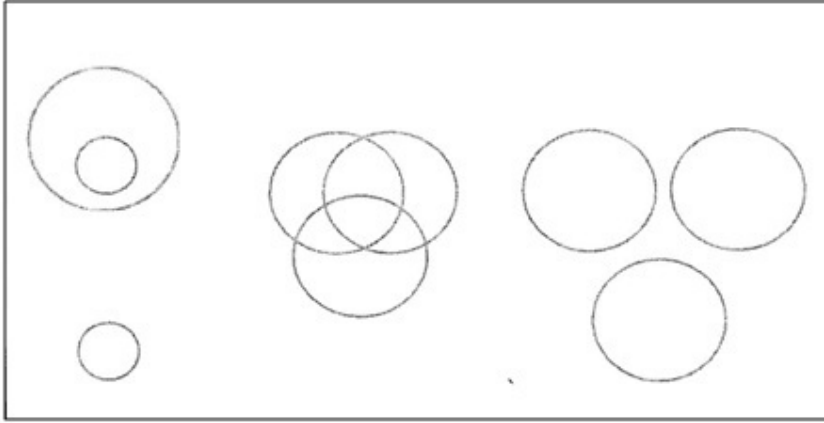
| A3 : | 30, 40, 50 |
| A4 : | 1000, 40, 50 |

Objective Question

| 55 | 55 | *In the following diagram, triangle represents mathematicians, recto programmers and circle represents philosophers. Which of the followir incorrect?* | 1.0 | 0.25 |

A1 :	Some of the philosophers are programmers.
A2 :	Some of the programmers are mathematicians.
A3 :	**Some of the mathematicians are philosophers. – (Correct Alternative)**
A4 :	Some of the programmers are not mathematicians

Objective Question

| 56 | 56 | | 1.0 | 0.25 |

Which of the diagrams best fits the association between Sparrow.

A1
: A – (Correct Alternative)

A2
: B

A3
: C

A4
: D

Objective Question

| 57 | 57 | A person walks at 10km/h for 6hr and at 8km/h for 12hr. Her average speed is _____ km/h | 1.0 | 0.25 |

A1
: 6.22

A2 8.67 – (Correct Alternative)

:

A3
: 3.77

A4
: 9

Objective Question			
58	58	If K and M together own 1750 balls. If 4⁄25 of K's share is equal to 2⁄5 of M's share, how many balls M have? A1 : 1250 **A2 : 500 – (Correct Alternative)** A3 : 750 A4 : 1050	1.0	0.25
Objective Question			
59	59	A large number of people suffer from Dengue every year in India. Dengue is spread by female mosquitoes during the day time. Dengue can be prevented by avoiding all chances of mosquitoes breeding. The para best supports the statement that A1 : Male mosquitoes do not spread diseases A2 : People should not step out during the day time **A3 : Mosquitoes breeding should be stopped – (Correct Alternative)**	1.0	0.25

| | | A4: Dengue is the only diseases that affects Indian people | | |

Objective Question

| 60 | 60 | A player was asked to run around the circular cricket ground as punishment. The coach was standing at the exact center of the ground which was 100 M from the boundary. How much distance does the player cover in one round? | 1.0 | 0.25 |

A1: 200.8

A2: 628.32 – (Correct Alternative)

A3: 800.8

A4: 400.4

Objective Question

| 61 | 61 | The stopping sight distance depends upon | 1.0 | 0.25 |

A1: Total reaction time of driver

A2: Speed of vehicle

A3: Efficiency of brakes

A4: All of the above – (Correct Alternative)

Objective Question

62	62	In the design of rigid pavements most often the highest magnitude of stress is	1.0	0.25
		A1: Friction stress during construction		
		A2: Corner load stress – (Correct Alternative)		
		A3: Edge load stress		
		A4: Interior load stress		

Objective Question

63	63	Consider the following characteristics of certain highway construction materials:	1.0	0.25
		1. CBR =80% 2. Group index =5 3. Group index =15 4. Soil classification –CH The correct decreasing order of their stability will be:		
		A1: 1, 2, 3, 4 – (Correct Alternative)		
		A2: 2, 1, 3, 4		
		A3: 3, 2, 1, 4		
		A4: 1, 2, 4, 3		

Objective Question

64	64	The value of camber recommended for cement concrete roads in heavy rainfall area is	1.0	0.25

		A1 :	1 in 33	
		A2 :	1 in 40	
		A3 :	**1 in 50 – (Correct Alternative)**	
		A4 :	1 in 60	

Objective Question

65	65	Factors affecting the highway alignment are	1.0	0.25
		A1 : Traffic		
		A2 : Geometric design		
		A3 : Economy		
		A4 : **All the above – (Correct Alternative)**		

Objective Question

66	66	Bitumen is derive from	1.0	0.25
		A1 : Destructive distillation of coal tar		
		A2 : Destructive distillation of petroleum		
		A3 Fractional distillation of petroleum – (Correct Alternative)		

:

A4 Naturally occurring ores
:

Objective Question

67	67	The mix design of concrete pavement is based on	1.0	0.25

A1 **Flexural strength – (Correct Alternative)**
:

A2 Compressive strength
:

A3 Shear strength
:

A4 Bond strength
:

Objective Question

68	68	Base course is used in rigid pavement for	1.0	0.25

A1 Prevention of subgrade settlement
:

A2 Prevention of slag cracking
:

A3 **Prevention of pumping – (Correct Alternative)**
:

A4 Prevention of thermal expansion
:

Objective Question

69	69	Name the traffic survey data which is plotted by means of 'desire lines'	1.0	0.25
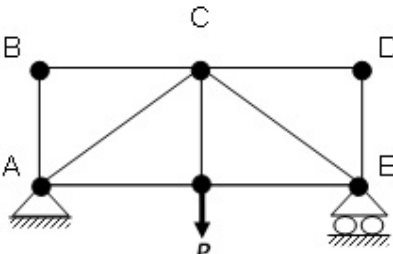
A1: Accident

A2: Classified volume

A3: Origin and destination – (Correct Alternative)

A4: Speed and delay

Objective Question

| 70 | 70 | The charts showing the volume variations over a period of years are known as | 1.0 | 0.25 |

A1: Trend charts – (Correct Alternative)

A2: Variation charts

A3: Traffic flow maps

A4: Volume flow diagram

Objective Question

| 71 | 71 | Which of the following tests does not measure the workability of concrete | 1.0 | 0.25 |

A1: Slump test

A2: Los Angeles test – (Correct Alternative)
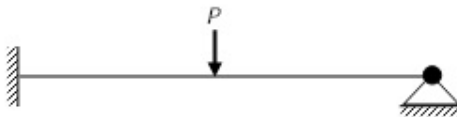
A3 Compacting factor test
:

A4 Vebe test
:

Objective Question

| 72 | 72 | Rs. 50,000 is equivalent to what annual payment for a period of 10 years at an interest rate of 10% | 1.0 | 0.25 |

A1 Rs. 9,370
:

A2 Rs. 8,680
:

A3 Rs. 8,300
:

A4 Rs. 8,135 – (Correct Alternative)
:

Objective Question

| 73 | 73 | A project network has five paths P1, P2, P3, P4, and P5. The total activity duration computed along each of the path is 22, 31, 20, 30, and 19 days respectively. What is the minimum duration for project completion in days? | 1.0 | 0.25 |

A1 22
:

A2 31 – (Correct Alternative)
:

A3 19
:
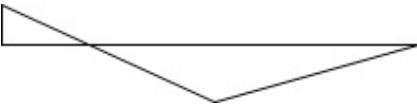
Objective Question

| 74 | 74 | Force in the member AB | 1.0 | 0.25 |

A1 : P/2

A2 : 0 – (Correct Alternative)

A3 : P

A4 : P/4

Objective Question

| 75 | 75 | The correct bending moment diagram for the beam shown in the figure is | 1.0 | 0.25 |

A1 :

		A2 :	**– (Correct Alternative)**	
		A3 :		
		A4 :		

Objective Question

76	76	The purpose of adding ammonia to potable water is to	1.0	0.25
		A1 : adjust pH		
		A2 : form combined chlorine residual – (Correct Alternative)		
		A3 : remove turbidity		
		A4 : protect teeth		

Objective Question

77	77	As per the code, in general, the limit state of serviceability in deflection is achieved by	1.0	0.25
		A1 : Providing extra safety factor in load		
		A2 : Decreasing the tension reinforcement		
		A3 : Controlling span to effective depth ratio – (Correct Alternative)		

	A4 :	Increasing the tension reinforcement		

Objective Question

78	78	Coarse grained soils are best compacted by the following roller.	1.0	0.25
		A1 : Vibratory – (Correct Alternative)		
		A2 : Smooth wheel		
		A3 : Sheep foot		
		A4 : Pneumatic		

Objective Question

79	79	The stopping sight distance (270 m) in a sag vertical curve (with tangent slopes +0.5% and +3.5%) is greater than the curve length. The curve length when rest other factors taken as per IRC standard, is	1.0	0.25
		A1 : 175 m – (Correct Alternative)		
		A2 : 266 m		
		A3 : 200 m		
		A4 : None of these		

Objective Question

80	80	Fresh sludge has moisture content of 98% and, after thickening; its moisture content is reduced to 96%. The reduction in the volume of sludge will be	1.0	0.25

A1 : 2%

A2 : 4%

A3 : 50% – (Correct Alternative)

A4 : 100%

Objective Question

81	81	An incompressible body can change its	1.0	0.25

A1 : shape and surface area. – (Correct Alternative)

A2 : only shape

A3 : volume

A4 : none of these

Objective Question

82	82	Newton's second law holds only for	1.0	0.25

A1 : single particle.

A2 system of particles

:

A3
:
continuum body

A4
: **all of these – (Correct Alternative)**

Objective Question

| 83 | 83 | A particle is moving in a circle of radius 1 m and with a constant speed of 5 m⁄s. What is the acceleration of the particle? | 1.0 | 0.25 |

A1
:
zero

A2
: **$25m/s^2$ towards the centre – (Correct Alternative)**

A3
:
$25m/s^2$ away from the centre

A4
:
none of these
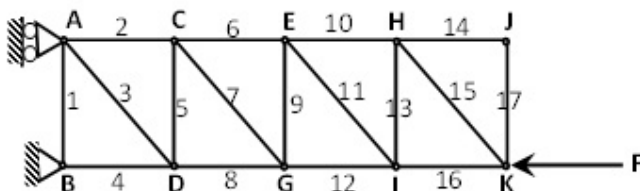
Objective Question

| 84 | 84 | In the classical elasticity theory, the stress matrix is symmetric only when | 1.0 | 0.25 |

A1
:
the body is in static equilibrium

A2
:
the body may be accelerating but not rotating

A3
: **always – (Correct Alternative)**

A4 never

:

Objective Question

85	85	How much is the shear stress when a body is in hydrostatic state of stress?	1.0	0.25

A1 : depends on which plane we are looking at

A2 : zero always – (Correct Alternative)

A3 : more information required

A4 : none of these

Objective Question

86	86	When a transverse load is applied at the free end of a cantilever having non-symmetrical cross-section, the cantilever does not twist if	1.0	0.25

A1 : the load passes through the cross-section's centroid

A2 : the load passes through shear center – (Correct Alternative)

A3 : the cantilever never twists

A4 : none

Objective Question

87	87	A linearly isotropic elastic beam buckles	1.0	0.25

A1
: when under tensile load

A2
: even under slight compressive load

**A3
: after critical compressive load – (Correct Alternative)**

A4
: none

Objective Question

| 88 | 88 | | 1.0 | 0.25 |

For the truss shown, the zero force members are (all members are light and joi are all frictionless hinges)

A1
: only HJ and JK

**A2
: all of them except BD, DG, GI and IK – (Correct Alternative)**

A3
: no zero force members

A4
: none of these

Objective Question

| 89 | 89 | Two smooth balls of equal masses undergo head-on collision. Assuming the coefficient of restitution to be unity. What can you say about their velocities just after collision? | 1.0 | 0.25 |
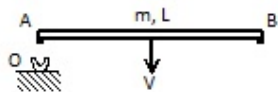
A1 : **velocities will be exchanged – (Correct Alternative)**

A2 : the ball moving fast initially will come to rest

A3 : both will start moving together

A4 : none of these

Objective Question

| 90 | 90 | Two forces 'F1' and 'F2' act in space at two different points. They have same magnitude but act in different directions. The moment of 'F2' about the line of action of 'F1' and the moment of 'F1' about the line of action of 'F2' are | 1.0 | 0.25 |

A1 : **same – (Correct Alternative)**

A2 : both zero always

A3 : different

A4 : none of these

Objective Question

| 91 | 91 | A uniform rod of mass 'm' and length 'L' is translating with a constant velocity 'V' as shown. The knob at A gets locked to the socket at O (fixed to the ground) on impact but the rod is free to rotate about O The velocity of point B immediately after the impact is | 1.0 | 0.25 |

A1 : **3⁄2 V – (Correct Alternative)**

A2 : V

A3 : 0

A4 : none of these
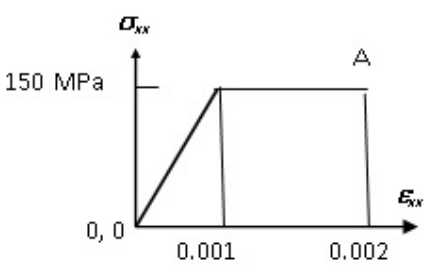
Objective Question		

92 92

The equation

$$\frac{\partial \rho}{\partial t} + \frac{\partial(\rho u)}{\partial x} + \frac{\partial(\rho v)}{\partial y} + \frac{\partial(\rho w)}{\partial z} = 0,$$

where, ρ is the fluid density and u, v, and w are the velocity components in directions, respectively, is valid for

1.0 | 0.25

A1 : liquids only

A2 : Newtonian fluids only

A3 : **any fluid flow – (Correct Alternative)**

A4 : steady flows only

Objective Question		

93 93 | The Navier-Stokes equation is valid ONLY for | 1.0 | 0.25

A1 : compressible flows

Objective Question

| 94 | 94 | If the principal stresses at a point in a body are: (i) σ_{11} = 100 MPa, σ_{22} = 0 MPa, σ_{33} = -30 MPa, the maximum shear stress at the point will be | 1.0 | 0.25 |

A1
:
65 Mpa – (Correct Alternative)

A2
:
50 MPa

A3
:
30 MPa

A4
:
none of these

Objective Question

| 95 | 95 | For the stress-strain curve shown, how much is the plastic strain at point A. | 1.0 | 0.25 |

A1
:
0.001 – (Correct Alternative)

		A2: 0.002		
		A3: 0		
		A4: none of these		

Objective Question

96	96	An inviscid incompressible flow	1.0	0.25
		A1: can have non-zero vorticity		
		A2: always has vorticity		
		A3: is always free of vorticity – (Correct Alternative)		
		A4: none of these		

Objective Question

97	97	Shear traction can act in a fluid media if	1.0	0.25
		A1: fluid is static.		
		A2: fluid is viscous but static		
		A3: fluid is ideal but moving		
		A4 fluid is viscous and moving – (Correct Alternative)		

		:		

Objective Question

98	98	For the stress The location of point P is (x=1, y=1, z=0). The speed of P is 2m/s and the rate of change of speed is 0.2m/s². The **centre** of curvature of the path taken by P lies at (1, 2, 0) at this instant. Then the acceleration of P, at this instant, is	1.0	0.25

A1 : $(0.2i + 4j)\, m/s^2$

A2 : $(\pm 0.2i + 4j)\, m/s^2$ **– (Correct Alternative)**

A3 : $(0.2i \pm 4j)\, m/s^2$

A4 : $(\pm 0.2i \pm 4j)\, m/s^2$

Objective Question

99	99	The Reynolds transport theorem is valid for	1.0	0.25

A1 : steady flows only

A2 : Newtonian fluids only

A3 : **any general fluid continuum – (Correct Alternative)**

A4 : incompressible flows only

Objective Question

100	100	What would be the deflection of the tip of an Euler-Bernouli cantilever beam of length L, Young's modulus E, and area moment of inertia I, if the transverse load acting at the free end of beam is P.	1.0	0.25

**A1
:** $(PL^3)/(3EI)$ **– (Correct Alternative)**

**A2
:** $(PL^3)/(4EI)$

**A3
:** $(PL^3)/(EI)$

**A4
:** none of these

Objective Question				
10 1	101	A grain boundary can be defined where	1. 0	0. 25

**A1
:** Two crystals of same orientations meet

**A2 Two crystals of different orientations meet – (Correct
: Alternative)**

**A3
:** Two crystals exhibit mirror symmetry

**A4
:** Two crystals of different kinds meet

Objective Question				
10 2	102	Which of the following cannot be produced by continuous cooling of a plain carbon steel	1. 0	0. 25

**A1
:** Coarse pearlite

**A2
:** Fine pearlite

A3: (a)   Bainite

A4: (a)   Martensite – (Correct Alternative)

Objective Question

103	103	Toughness of the material can be expressed by	1.0	0.25

A1: Ratio of ultimate tensile strength to yield strength

A2: Ratio of fracture strength to yield strength

A3: Area under the stress strain curve – (Correct Alternative)

A4: None of the above

Objective Question

104	104	Hardness of the material can be described as	1.0	0.25

A1: Resistance to elastic deformation

A2: Resistance to plastic deformation – (Correct Alternative)

A3: Resistance to both elastic and plastic deformation

A4: None of the above

Objective Question

105	105	Which of the following material has the highest ductility	1.0	0.25
		A1: **Aluminium – (Correct Alternative)**		
		A2: Magnesium		
		A3: Zinc		
		A4: Alumina		

Objective Question

106	106	Which of the following is a measure of forecasting model accuracy:	1.0	0.25
		A1: **Mean absolute deviation – (Correct Alternative)**		
		A2: Standard deviation		
		A3: Reorder point		
		A4: Average lead time		

Objective Question

107	107	Which of the following costs can be considered in determining inventory parameters:	1.0	0.25
		A1: Carrying cost		
		A2: Ordering cost		

		A3: Shortage cost		
		A4: All of the above – (Correct Alternative)		
Objective Question				
108	108	Which of the following is not a material planning feature:	1.0	0.25
		A1: Bill of material		
		A2: Lead time offsetting		
		A3: Safety stock		
		A4: Delivery reliability – (Correct Alternative)		
Objective Question				
109	109	Lot size and safety stock in 'Just in Time' (JIT) system are:	1.0	0.25
		A1: Small – (Correct Alternative)		
		A2: Large		
		A3: Unpredictable		
		A4: None of the above		
Objective Question				

110	110	Which of the following provide a basic feasible solution to balanced transportation problem:	1.0	0.25

A1: North West Corner rule

A2: Minimum cost method

A3: Vogel's approximation method

A4: All of the above – (Correct Alternative)

Objective Question

111	111	In a stress strain curve, increase in temperature reflects:	1.0	0.25

A1: Lowers toughness

A2: Raised toughness – (Correct Alternative)

A3: Raised modulus of elasticity

A4: Raised yield stress

Objective Question

112	112	Which of the following is NOT a measure of ductility:	1.0	0.25

A1: Modulus of elasticity – (Correct Alternative)

A2: Total elongation

A3
:
Reduction in area

A4
:
B&C

Objective Question

| 113 | 113 | Which of the following metal has a FCC crystal structure: | 1.0 | 0.25 |

A1
:
Aluminum – (Correct Alternative)

A2
:
Chromium

A3
:
Vanadium

A4
:
Zirconium

Objective Question

| 114 | 114 | | 1.0 | 0.25 |

Match the following

	Description		Prope
I	Resistance to permanent indentation	L	Creep
II	Plastic deformation up to fracture point	M	Tough
III	Permanent elongation under static loading	N	Hardn
IV	Area under stress-strain curve	P	Ductil

		A1: I-N, II-L, III-M, IV-P		
		A2: I-L, II-M, III-N, IV-P		
		A3: I-N, II-P, III-L, IV-M – (Correct Alternative)		
		A4: I-L, II-N, III-P, IV-M		

Objective Question

115	115	Presence of Hydrogen in metals can cause:	1.0	0.25
		A1: Severe embrittlement		
		A2: Reduce ductility		
		A3: Premature failure		
		A4: All of the above – (Correct Alternative)		

Objective Question

116	116		1.0	0.25

Match the following in reference to the Iron-Carbon

	Relevance		State
I	Polymorphic transformation of Iron	L	Ferr
II	Solid solution of BCC Iron	M	Aust
III	100% Iron Carbide	N	Cem

A1: I-L, II-N, III-M

A2: I-N, II-M, III-L

A3: I-L, II-M, III-N

A4: I-M, II-L, III-N – (Correct Alternative)

Objective Question

| 117 | 117 | Crank shafts are generally made up of: | 1.0 | 0.25 |

A1: Low carbon steel

A2: Medium carbon steel – (Correct Alternative)

A3: High carbon steel

A4: High speed steel

Objective Question

| 118 | 118 | Match the following: | 1.0 | 0.25 |

Match the following:

	Application		Alloy
I	Orthopedic Implants	L	Nickel
II	Nuclear Power Plants	M	Magnesium
III	Aerospace	N	Titanium
IV	Missile Components	P	Aluminum

A1: I-L, II-N, III-P, IV-M

A2: I-L, II-M, III-P, IV-N

A3: I-N, II-L, III-P, IV-M – (Correct Alternative)

A4: I-M, II-L, III-P, IV-N

Objective Question

| 119 | 119 | Down milling provides: | 1.0 | 0.25 |

A1: Better surface finish – (Correct Alternative)

A2: Poor surface finish

A3: Shorter tool life

A4: All of the above

Objective Question

120	120	The tendency to form a built-up edge (BUE) can be reduced by:	1.0	0.25
		A1: Decreasing the rake angle		
		A2: Decreasing depth of cut		
		A3: Increasing the rake angle		
		A4: Decreasing depth of cut and Increasing the rake angle – (Correct Alternative)		